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uniform or locally abrupt. Not only did the cable break, but the repair boat reported that half a mile of it had been buried in debris on the bottom and had to be abandoned and a new piece spliced in.

It is said that the cable was broken in almost the same place by an earthquake between the years 1882 and 1883.

To the writer the only adequate explanation of the breaking of the cable and the burying of half a mile of it is that movement occurred along an old fault escarpment, or fault zone, which marks the boundary between the continental shelf and the deep ocean basin, and that this movement was great enough to cause the earthquake, resulting in a submarine landslide. It is not known whether the fault displacement broke the cable or whether the submarine landslide caused by the jar of the faulting broke it; of course the jar of the fault movement was the earthquake.

Nearly all of the later shocks felt were accompanied by peculiar underground sounds which, at times, seemed to begin to the eastward of the observer and to die away in 5 or 10 seconds to the westward of him. The sound was not unlike the dull boom made by the fracture of ice on large lakes, due to shrinkage, when the weather has suddenly become extremely cold. The noise of these ice fractures may begin far to the right of an observer and die away in the distance, in a few seconds, to the left of him. After listening, several times, to the underground sounds that accompanied shocks, the writer became convinced that they were due to the formation of small shears or strain-relieving cracks in the rocks, formed perhaps considerably below the surface. A search for such cracks was unsuccessful, due either to the sparsity of rock exposures or to the fact that cracks might not be distinguishable from ordinary jointing, or that they might be parallel, or nearly parallel, to the surface and might not outcrop in the vicinity at all. It is thought that the rock strains would be relieved by many very small fractures along a strained zone rather than by one large break, and the differential movement along each small fracture

might be extremely small, possibly measurable say in tenths of an inch.

The breaking of the cable and the burying of a part of it, together with the underground sounds heard several times, as far as the writer can see admit of no other adequate explanation than that herein ascribed to them.

The other geological principle connected with these earthquakes was that of the elasticity of the earth's crust. The writer was on the top of a steep conical mountain peak which stood about 2,000 feet above the surrounding country, when a heavy quake came, causing the mountain to behave like a stiff jelly. One felt as though the mountain were swaying through an arc of several inches. Making ample deductions for the tendency of the senses to exaggerate such an unusual phenomena, it is thought that the swaying motion in a horizontal plane was actually about three quarters of an inch. It was one of the most impressive demonstrations of the elasticity of solid rock, of the somewhat jelly-like motion that can be imparted to a "rock-ribbed" mountain, that one could well imagine. With the motion a dull, heavy underground rending sound began on the northeasterly to northerly side of the mountain and died away in the distance on the other side, being audible for say 20 to 25 seconds.

These underground sounds had a most terrifying effect on the inhabitants, who believed they were about to be overwhelmed by some volcanic catastrophe. The investigation was very successful in assuring them that these dreaded sounds were quite harmless and were not due to any subterranean fires, and that the near-by mountains were not going to turn into volcanoes and overwhelm them as they feared. In spite of this soothing information, however, a few of the natives were unjust enough to criticize the writer for not stopping the quakes as quickly as they wished. Such is "man's inhumanity to man."

DONALD F. MACDONALD  
U. S. GEOLOGICAL SURVEY

#### THE THOMAS SAY FOUNDATION

AN organization, with the above name, was formed under the auspices of the Entomolog-

ical Society of America at its Philadelphia meeting. Its purpose is to honor the memory of the father of American entomology, Thomas Say, by the publication of a series of volumes on systematic entomology. These volumes are to be of a monographic or bibliographic character and to deal only with the insects of North America. It is hoped that a series of volumes similar in appearance and of the same high standard as the volumes of the John Ray Society of England can be issued. To this end a temporary committee consisting of J. M. Aldrich and Nathan Banks, U. S. Bureau of Entomology, E. P. Van Duze, University of California, Morgan Hebard, Academy of Natural Sciences of Philadelphia, treasurer, and Alex. D. MacGillivray, University of Illinois, editor, was appointed to solicit funds, and when these are sufficient, to issue such works as they may deem worthy of publication. The most difficult problem confronting the committee is the securing of a fund sufficient for publication. It is hoped that an endowment fund, the income from which will be sufficient for the issuance of about two volumes per year, will eventually be available. Until such a time, however, an attempt will be made to obtain subscriptions for the issuance of volumes.

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#### AWARDS OF THE FRANKLIN MEDAL

THE Franklin medal, the highest recognition in the gift of The Franklin Institute of the state of Pennsylvania, has recently been awarded to Heike Kamerlingh Onnes and to Thomas Alva Edison. The awards were made on the recommendation of the institute's committee on science and the arts, that to Onnes being in recognition of his "long-continued and indefatigable labors in low-temperature research which has enriched physical science, not only with a great number of new methods and ingenious devices, but also with achievements and discoveries of the first magnitude" and that to Edison in recognition of "the value of numerous basic inventions and discoveries forming the foundation of world-wide industries, signally contributing to the well-being, comfort and pleasure of the human race."

The Franklin Medal Fund, from which this medal is awarded, was founded on January 1, 1914, by Samuel Insull. Awards of the medal are to be made annually to those workers in physical science or technology, without regard to country, whose efforts, in the opinion of the institute, have done most to advance a knowledge of physical science or its applications. The present awards are the first to be made.

The medal awarded to Professor Onnes was received on behalf by His Excellency, Chevalier van Rappard, minister from the Royal Netherlands government, at the stated meeting of the institute on the evening of Wednesday, May 19, and at this meeting Mr. Edison was the guest of the institute and received his award in person. Following the presentations, an address entitled "Electricity and Modern Industrial Growth" was delivered by Mr. Insull.

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#### SCIENTIFIC NOTES AND NEWS

DR. FRANK J. GOODNOW was installed as president of the Johns Hopkins University on May 20. After he had delivered his inaugural address on "Modern Educational Ideals," he conferred degrees on twelve distinguished scholars and scientific men who were presented by Dr. William H. Welch. The scientific men on whom the degree of doctor of laws was conferred are as follows: John Mason Clarke, state geologist and paleontologist of New York; John Dewey, professor of philosophy, Columbia University; Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research; George W. Goethals, major general of the United States Army, chief engineer of the Panama Canal; Thomas Hunt Morgan, professor of experimental zoology, Columbia University; Michael I. Pupin, professor of electro-mechanics, Columbia University; Robert Simpson Woodward, president of the Carnegie Institution.

AT its annual meeting held on May 12, the American Academy of Arts and Sciences, acting upon the recommendation of the Rumford Committee, voted: "That the Rumford Premium be awarded by the Academy to Charles Greeley Abbott for his researches on Solar Radiation." The committee has appropriated